Global Response R4: Quino Checkerspot Butterfly

In the early 1990s, when the County and Wildlife Agencies (California Department of Fish and Wildlife [CDFW] and the U.S. Fish and Wildlife Service [USFWS]) were preparing the Otay Ranch Resource Management Plan (Otay Ranch RMP) and the Multiple Species Conservation Program (MSCP) Subarea Plan, the Quino checkerspot butterfly had no protective designation under state or federal law. For that reason, among others, the Quino checkerspot butterfly was not addressed in the Otay Ranch RMP and was not included in the MSCP as a covered species. In January 1997, the USFWS issued a final rule listing the Quino checkerspot butterfly as an endangered species. Although this final listing decision occurred prior to adoption of the MSCP, the plan was too far along to be amended to include the Quino checkerspot butterfly. As a result, the MSCP does not cover Quino checkerspot butterfly and thus does not provide "take" authorization for the species.

To address this gap in take coverage, the County has been working on an addition (or amendment) to the MSCP that would bring the Quino checkerspot butterfly within the protections and take authorization of the plan. However, the Applicant anticipates processing a Section 7 consultation if take is needed for the Quino checkerspot butterfly and the Addition is yet not adopted. The addition has not yet been finalized or adopted, but it offers an approach to assessing impacts. There are currently two draft versions of the document (previously termed an "amendment") – one prepared in 2009 and a second prepared in 2010. The two versions are similar in many respects. For example, both the 2009 and 2010 draft Amendments indicate that 78% of the Class A habitat for Quino checkerspot butterfly (potential habitat within one kilometer of a known Quino checkerspot butterfly location) and 80% of the Class B habitat (potential habitat outside of one kilometer of a known Quino checkerspot butterfly location) are already conserved in the MSCP Subarea Plan or included in "hardline" preserves proposed by the Village 13 Project.

The two versions of the Amendment were carefully reviewed, and the applicant consulted with the Wildlife Agencies while the applicant was working on the proposed project, in order to understand the mitigation needs as well as the features that are important to include. As part of their impact/mitigation strategy, the Wildlife Agencies noted that additional management and monitoring measures had to be incorporated into the proposed Project and alternatives. The applicant, in conjunction with the site analysis of the Quino checkerspot butterfly occurrences and preserve design, proposed an alternative, Alternative H, that includes less edge effects, a smaller footprint, and the development of a Quino Checkerspot Butterfly Management/Enhancement Plan. New surveys were conducted as directed by the Wildlife Agencies, using a modified protocol that was approved. Thus a more recent focused survey for Quino checkerspot butterfly was included in the Alternative H analysis that included detailed mapping of the larvae host plant based on the density of the host plant populations, documentation of Quino checkerspot butterfly larvae, and observation of adult butterflies. The mitigation was assembled including the preparation of a management/enhancement plan. The plan includes a survey methodology for on-site preserve areas pre- and post-construction to monitor effects on Quino checkerspot butterfly population health.

The Quino Checkerspot Butterfly Management/Enhancement Plan, including the performance criteria set forth below, was prepared to comply with and further the recovery goals described in the Quino Checkerspot Butterfly Recovery Plan (2003) and 5-Year Review (2009) issued by the United States Fish and Wildlife Service. The Quino Checkerspot Butterfly Management/Enhancement Plan may be superseded

or rendered unnecessary upon completion and adoption of the County of San Diego Quino Checkerspot Butterfly MSCP Addition.

The plan will include recovery measures with performance standards that may include but are not limited to:

- Annual restoration and enhancement of 15 acres per year with quantitative and qualitative requirements that outline the percent native cover, percent survival, and percent nonnative cover as well as reviewing the health and vigor of the host plants;
- Quantifiable adaptive management triggers that rely on yearly as needed population monitoring and statistical changes in the population size to then require restoration as noted above;
- Reintroduction of the species and continued restoration of unoccupied areas when population declines are not noted;
- Establishment of a permanent funding mechanism to work in concert with the funding requirements of Preserve lands conveyed to the POM.
- Monitoring and management requirements to ensure the project results in no change in hydrological conditions, including moisture gradients, that would adversely affect Quino checkerspot butterfly habitat in the Preserve.
- Monitoring and management of all plantings to ensure no non-native insects are introduced into the Preserve where they might adversely affect Quino checkerspot butterfly habitat.

The Wildlife Agencies commented on drafts of the Plan during public review of the DEIR, and responses to the comments are reflected in the FEIR. Those revisions have been carried forward to the Recirculation Package. It should be noted that the Quino Checkerspot Butterfly Management/Enhancement Plan is in a draft form and the Plan, including cost estimates and management activities, will require review, adjustment, and concurrence from the Wildlife Agencies.

Survey Data

In 2008, Dudek surveyed the entire Otay Ranch Resort Village (also referred to as Village 13) ownership (1,869 acres), including the preserve, according to the 2002 protocol (USFWS 2002). The 2008 focused survey for the Quino checkerspot butterfly was conducted over a four-week period (as directed by the USFWS) by Dr. Anita Hayworth, Brock Ortega, David Flietner, Jeffrey Priest, Kamarul Muri, Paul Lemons, Vipul Joshi, Jun Rong Powell, and Tricia Wotipka. In addition, in 2008 Dudek surveyed a total of 30 points selected by the USFWS in the project area as part of a Quino checkerspot butterfly range-wide study in which the applicant had agreed to participate.

In 2016, Dudek again surveyed the entire project area in accordance with the most recent Quino checkerspot butterfly survey guidelines (December 15, 2014), as modified by the 2016 Building Industry Association (BIA) deviation that BIA had negotiated with the Wildlife Agencies, applicants, and County Staff. The BIA deviation combines elements of the USFWS 2002 and 2014 survey guidelines with key modifications to the 2014 FWS Quino checkerspot butterfly survey guidelines (December 15, 2014). These modifications include: (1) surveying a reference site to determine the life stage of Quino and define the flight season; (2) initiating surveys within one week of observed Quino flight at the reference site(s); and (3) mapping host plants as a separate effort following the methods used in 2014 by Helix Environmental for the Village 14 project.

The Village 13 surveys also deviated from the 2014 survey guidelines as to duration. Specifically, the 2016 surveys were terminated after three weeks following the initial observed Quino checkerspot butterfly flight at the reference site and determined they would not impede detection of Quino checkerspot butterfly since the survey effort for the host plant mapping was consistent with the survey guidelines, the coverage of the site and the rate of coverage of the site was consistent, and the timing of surveys was keyed to the observations within areas known to be occupied.

The purpose of the 2016 surveys was to refine the DEIR's analysis of Project impacts on Quino checkerspot butterfly and determine whether the conclusions drawn in that analysis were still accurate and supportable. This necessarily involved comparing the 2016 survey data with the 2008 survey data. In addition, both the 2008 survey data and the 2016 survey data provide the technical basis for evaluating project alternatives including Alternative H and their potential impacts on Quino checkerspot butterfly.

The 2016 surveys addressed two issues: (1) adult Quino checkerspot individuals as a metric of occupied habitat; and (2) Quino checkerspot host plants, namely *Plantago erecta*.[1]

With respect to adult Quino checkerspot butterflies, Dudek located fewer adult Quino during the 2016 surveys than during the 2008 surveys. Specifically, the 2016 surveys recorded 18 sightings of adult Quino checkerspot butterflies, four of which were within the Alternative H development footprint. The 2008 surveys recorded 71 sightings of adult Quino checkerspot butterflies, 13 of which were within the Alternative H development footprint. These data indicate that 2008 was a substantially better year than 2016 for observing Quino checkerspot butterflies on and near the Project site. For this reason, the 2008 data was used for purposes of assessing the impacts on adult Quino checkerspot butterflies. However, even if the 2016 and 2008 survey data were combined, the number of Quino checkerspot occurrences within the development footprint of Alternative H does not change substantially. Moreover, the occurrences were recorded in the same general locations during both rounds of surveys. In light of these facts, the 2016 survey data supplements but does not contradict or change the analysis and conclusions set forth in the DEIR.

With regard to host plants, Dudek mapped host plant species as a separate effort following the methods used in 2014 by Helix Environmental for the Village 14 project, with the exception that Dudek mapped plant density rather than absolute numbers of plants. For example, host plant species were mapped in patches of low density (11 - 100 plants), medium density (100 – 1,000 plants), and high density (1,000 – 10,000 plants), with the addition of a very low density category (1-10 plants) which can be collapsed into the low density category per the BIA protocol if warranted. In addition, the units for mapping were based on plants per square meter. Note that the surveys included purple owl's clover (*Castilleja exserta*) but the observed numbers of the species were very low in 2016. High density patches of host plant (*Plantago erecta*) were mapped as polygons if they were in areas larger than approximately 250 square feet. If observed, Quino larvae were recorded and a biologist holding the appropriate permit was present to document the observation.

[1] The other major host plant species present on Village 13, purple owl's clover (*Castilleja exserta*)], did not come up very well in 2016 but was mapped where observed.

Impact Analysis

Proposed Boundary Adjustment

Table 1, below, summarizes the impacts of Alternative H on Quino checkerspot butterfly. Alternative H is consistent with the MSCP Preserve and development hardline, and therefore does not require an MSCP Boundary Adjustment. In addition, Alternative H includes conservation of vernal pools, San Diego thornmint, the allowable uses of the realigned Otay Lakes Road and some additional habitat that was originally designated as development within an area designated Conserved Open Space. All impact areas are within the areas designated by the MSCP County Subarea Plan as development. The impact areas within the Preserve are all associated with allowable uses for infrastructure. As such, Alternative H is consistent with the MSCP.

Impacts to Locations Where Quino Checkerspot Butterflies Have Been Observed

During the 2008 survey, Dudek observed Quino checkerspot butterfly individuals at 71 locations.[2] Of these, Alternative H will directly disturb 17 observation locations. Thus, based on this data, Alternative H will adversely affect approximately 17% of the Quino checkerspot butterfly observation locations onsite. Based on these data, the Draft EIR identified this impact as significant absent mitigation. The 2016 survey data, while reflecting substantially fewer occurrences of Quino checkerspot butterfly adults, do not change the Draft EIR's impact conclusion.

Impacts to Habitat Suitable for Quino Checkerspot Butterfly

The Project currently includes approximately 1,470 acres of habitat that could support Quino checkerspot. Of these, Alternative H would disturb 389 acres (approximately 26 percent), consisting of coastal sage scrub and disturbed coastal sage scrub to be affected by implementation of the Project. The impact acreage does not include areas of non-native grassland, disturbed valley needlegrass grassland, or chaparral vegetation communities, as these vegetation types include habitat that is dense canopy or low-quality grasslands with heavy cover of non-native grasses and forbs, both of which are generally unsuitable for Quino checkerspot butterfly. For this reason, the Wildlife Agencies recommended in the meeting on January 23, 2013 that impacts, and proposed mitigation, not include habitat that consists of dense canopy or low-quality grassland area. The grassland habitat within the project footprint is dominated by non-native grasses or broadleaf species; and these non-native grassland areas are so dense with grasses that no soil surface is exposed and few Quino checkerspot butterfly host plants are present. The disturbed valley needlegrass grassland is likewise dominated by non-native and invasive *Erodium* species such that it provides a functionally closed canopy with

[2] A number of the 2008 observations took place in the same location from one week to the next, thus it is likely these observations were of the same individual and could be considered duplicate counts. Duplicate observations were identified through a review of mapping, wing wear, notes, and photographs and population counts were adjusted by removing the duplicate observation.

no exposed soil surface. Only the very edges of the mesa with grassland habitat have host plant present. In addition, the chaparral habitat has become very dense over the past few years. Originally, with the 2008 surveys, Dudek made an effort to survey within the chaparral. The habitat now is so dense that there is a risk of damaging the habitat during a survey effort. Thus, the chaparral habitat also is a functionally closed canopy with only periodic dirt roads passing through. Nevertheless, the loss of approximately 389 acres of potentially suitable Quino checkerspot butterfly habitat is considered significant absent mitigation.

Table 1 – Alternative H Impacts on Quino Checkerspot Butterfly

Species Scientific Name	Regulatory Status: Federal; State; MSCP; County Group	Basis for Impact Evaluation	Number of Quino Individuals/ Acre(s) impacted	Percent Permanently Impacted On Site	Number/ Acre(s) preserved	Percent Preserved On Site
Quino checkerspot (*Euphydryas editha quino*)	USFWS: FE CDFW: None MSCP: Not Covered County: 1	Over five years of surveys, a total of 145 individuals have been observed; 71 observed in 2008. Coastal sage scrub and disturbed coastal scrub communities were considered potential habitat. A total of 1,470 acres of potential habitat are located on site. A total of 1,624 acres of critical habitat occurs on site.	32 individuals would be impacted (inclusive over 5 years of surveys); 17 from the 2008 survey and 4 from the 2016 survey). A total of 474.83 acres of critical habitat would be impacted. A total of 389 acres of potential occupied habitat would be impacted.	26% of potential habitat would be impacted	113 individuals (inclusive over 5 years of surveys); 54 from the 2008 survey and 12 from the 2016 survey 1,149.17 acres of critical habitat, 1,081 acres of potential occupied habitat	Alternative H proposes to conserve approximately 1,107.72 acres of suitable, restored, or occupied coastal sage scrub for Quino checkerspot butterfly on site, all of which is located within the existing Otay Ranch RMP Preserve and Conserved Open Space areas resulting in preservation of approximately 75% of potential habitat.

Impacts to Quino Checkerspot Butterfly Host Plants

As reported in the Draft EIR, the 2008 surveys and host plant mapping indicate that Alternative H would have a significant impact on host plants for Quino checkerspot butterfly, absent mitigation. The 2016 host plant mapping effort produced results similar to those of the 2008 host plant mapping effort. While the 2016 host plant data refine and amplify the 2008 host plant data, they do not alter the Draft EIR's conclusion regarding impacts on host plants.

As noted above, detailed mapping of the host plant for the Quino checkerspot butterfly was conducted and reported in the protocol survey in 2016. This survey included conducting mapping of the density of the host plant dot seed plantain (*Plantago erecta)* along with any other host plant species observed. Table 2 displays the

results of the overall mapping conducted based on the impact and preserve land use categories, and a summary of only medium and high density of the host plant is provided in Table 3.

Table 2 shows all of the densities recorded by points including very low, low, medium, and high. The mapping of host plant reports the percentage of points in the various land use designations and shows that about 58 percent of the host plant is found within the Village 13 RMP preserve or the conserved open space areas.

Table 2. Percentage of Each Density Category Recorded for *Plantago erecta* in 2016 for Village 13

***Plantago erecta* Density Categories**					
Land Use	**Very_low (%)**	**Low (%)**	**Medium (%)**	**High (%)**	**Total (%)**
Allowable Use (Roads and Water Tank)	0.0	0.5	0.1		0.6
Development Footprint	6.4	23.6	9.2	2.0	41.2
Potential Conserved Open Space	0.6	6.4	3.1	0.3	10.4
RMP Preserve	8.1	20.6	13.6	5.5	47.8
Grand Total	**15.1**	**51.1**	**26.0**	**7.8**	**100**

Table 3 documents the medium and high-density populations only and shows that about 22 percent of the total population of the host plant is within the preserved areas (RMP preserve and Conserved Open Space) versus about 11 percent within the designated development area of Alternative H.

Table 3. Percentage of Medium and High-Density Categories Recorded for *Plantago erecta* in 2016 for Village 13

	***Plantago erecta* Density Categories**		
Land Use	**Medium Density (%)**	**High Density (%)**	**Total (%)**
Allowable Use (Roads and Water Tank)	0.1		0.1
Development Footprint	9.2	2.0	11.2
Potential Conserved Open Space	3.1	0.3	3.4
RMP Preserve	13.6	5.5	19.1
Grand Total	**26.0**	**7.8**	**33.8**

Impact Conclusion

For Alternative H, vegetation mapping was used as the basis for calculating project-related impacts on suitable Quino checkerspot butterfly habitat. The Wildlife Agencies concurred in this approach. This method was considered more appropriate than using momentary observation of adult butterflies and/or host plants to determine habitat suitability. Because individual butterflies and host plants vary in population size, density, and location from year to year (and from day to day during the flight season), the habitat acreage method was considered a more reliable method of determining project-related impacts on the species. In short, analyzing the more predictable and stable vegetation community provides a more concrete evaluation of Alternative H's impact on habitat suitable for the species.[3] The numbers of observed Quino Checkerspot butterfly adults within the Alternative H development footprint are reported in Table 1 for transparency of impact analysis.

Mitigation

As stated above, the proposed mitigation was guided by the analysis in the draft 2010 Quino Checkerspot Butterfly Amendment, and requires 2:1 on-site preservation of similar and suitable habitat for impacts to Quino checkerspot. As indicated above, the proposed Project would disturb approximately 389 acres of Quino checkerspot habitat (see Table 1). Thus, in following the 2010 version, Alternative H would require a total of 778 acres of on-site preservation to mitigate impacts on Quino checkerspot butterfly to a less than significant level. The proposed mitigation habitat will consist of 1,107.72 acres of currently suitable or occupied coastal sage scrub, inclusive of four additional acres, located within the project boundaries, of restored Quino checkerspot butterfly habitat that currently consists of low quality weedy non-native grass. This preserved habitat will be placed into a conservation easement. Thus, the preserve acreage would satisfy the draft 2010 Quino Checkerspot Butterfly Amendment mitigation ratio.

Note that Alternative H would help meet the overall South County Quino Management Unit (South County QMU) management goal of protecting, restoring and enhancing Quino checkerspot butterfly habitat within currently occupied sites. As noted above under Background, the vast majority of the occupied habitat is already protected by virtue of being located within the MSCP preserve. In addition, the design of Alternative H will also assist in maintaining connectivity (i) between Otay Lakes and Rancho Jamul occurrences to the north, (ii) the areas to the south as connected by the designated link, (iii) and the areas to the east and thence north and south within public preserve lands. Management actions for Quino checkerspot butterfly will integrate both an Active Management Program and adaptive management as described in the Quino Checkerspot Butterfly Management/Enhancement Plan.

Through the RMP requirement for preserve conveyance, implementation of Alternative H will result in dedication of the designated Preserve land to the Otay Ranch Preserve Owner Manager (POM), which currently consists of the County of San Diego and City of Chula Vista. In addition, Alternative H must participate in preserve management funding, which requires that a Communities Facilities District (CFD) be established on the developed portions of the Project area. This CFD charges a special tax against the

[3] A comparison of the occupied habitat model from the 2009 and 2010 draft Quino Checkerspot Butterfly Amendments using Dudek's 2008 Quino checkerspot butterfly survey data versus that of the vegetation mapping habitat-based impact analysis indicates that the impact calculated by both methods are very similar with 449 acres being modeled as occupied versus 483 acres being calculated based on habitat mapping.

developed portions of the site to perpetually fund the management and maintenance of the Otay Ranch Preserve. What this means for the Quino checkerspot butterfly is that there will be funding for maintenance and monitoring and a habitat manager to oversee the condition of the Preserve and the status of the species.

Alternative H vegetation community acreages are shown in Table 4 and include those areas not impacted by grading or fuel modification zones, as well as areas proposed to be restored to native habitat and areas that are allowed uses within the Preserve (i.e. – allowed infrastructure). Of the approximately 1,869 acres of the Project site, a total of 1,107.72 acres (excluding the development footprint) is currently suitable habitat for Quino checkerspot butterfly or will be restored within the proposed preserve.

The Preserve provides connectivity for Quino checkerspot butterfly to off-site occupied areas to the north, east, and south. Provisions are included in the project design to provide for connectivity within the site as well as to off-site areas. Adjacent preserve complexes include: Otay Lakes Cornerstone lands immediately to the south, west and northwest; BLM lands, including Otay Mountain Wilderness Area to the southeast; CDFW lands to the north, south and east; USFWS lands immediately to the east; and Otay POM lands to the south in addition to those immediately to the north. In addition, the Alternative H preserve will extend to the north as an already established contiguous block of conserved lands from the Mexico border to Otay Lakes.

Based on the suite of conservation measures included in Alternative H, as described above, the County has concluded that Alternative H's impacts on Quino checkerspot butterfly individuals, suitable habitat, and host plants will be mitigated to less than significant levels.

Federal ESA Issues

A number of commenters raised issues regarding to the Project's potential need for federal permission to "take" Quino checkerspot butterfly. Some commenters also requested information as to whether and to what extent the Project would affect federally-designated critical habitat for the Quino checkerspot butterfly. Both of these issues pertain to *federal* law and therefore fall outside the purview of CEQA. They are beyond the scope of this EIR. Nevertheless, in an effort to provide as much information to the public as possible, the County responds as follows:

Federal Take Authorization

The Wildlife Agencies have indicated that the project could address the species by participating in the County's Quino Checkerspot Butterfly Amendment or could prepare a Section 10(a) Permit Habitat Conservation Plan, and that management and monitoring tasks would be the same regardless of the approach. Finally, the Wildlife Agencies also indicated that Quino checkerspot butterfly could be addressed through the U.S. Army Corps of Engineers (ACOE) Section 7 consultation if the ACOE took jurisdiction over the entire site. As such, Alternative H will be pursuing the permitting of the take of Quino checkerspot butterfly via Section 7 consultation.

To elaborate, the project applicant will be seeking federal wetlands permits from the U.S. Army Corps of Engineers (Army Corps), for the implementation of Alternative H, a process which, under Section 7 (or 10), requires the Army Corps to consult with U.S. Fish and Wildlife Service (USFWS) regarding the

proposed project's impacts on listed species and designated critical habitat. At the end of that process, USFWS will prepare a Biological Opinion regarding those impacts and whether they would result in jeopardy to any listed species. The Biological Opinion will also identify reasonable and prudent measures that must be implemented in order to avoid such jeopardy. The Army Corps must then include those measures as conditions of approval in any permit the Army Corps issues to the project applicant. As shown, this entire consultation process takes place under federal law and not under CEQA. The only connection is that CEQA requires the applicant to comply with whatever conditions the federal agencies impose as part of the incidental take authorization secured under Section 7 or 10. Here, the County has included that requirement among the biological mitigation measures for the project. As such M-BI-9a states "If the project receives take authorization through the federal Endangered Species Act (FESA) Section 7 or Section 10 processes, the Project Applicants will comply with any and all conditions including preconstruction surveys that the USFWS may require for take of Quino checkerspot butterfly pursuant to FESA."

Critical Habitat Impacts

With respect to critical habitat for the Quino checkerspot butterfly, the project site is located within the Otay Unit, which consists of 34,941 acres of designated critical habitat. Note, however, that not all 34,941 acres actually provide habitat that is suitable for Quino checkerspot butterfly. Of the 34,941 acres, Alternative H would disturb 474.83 acres or approximately 1.4 percent of the total. However, based on the areas within the project site deemed suitable for the Quino checkerspot (i.e., due to presence of suitable habitat or host plant), the proposed Project would result in 389 acres of impacts to Quino checkerspot butterfly habitat.

Table 4

Summary of Impacts to Vegetation Communities within Otay Ranch RMP Preserve On-site

Vegetation Community Type	Total Otay Ranch RMP Preserve Impacted and Not Impacted (Acres)	Allowable Uses within the Otay Ranch RMP Preserve (Impacted Acres)				Otay Ranch RMP Preserve Not Impacted
		Permanent Impacts	*Temporary Impacts*			
		Water Tank and associated road grading for the tank	*Slope grading to be revegetated (for water tank slopes and Otay Lakes Road Slopes)*	*Natural Drainage Bypass Facilities*	*Water line (trench then restore)*	
Coastal Sage Scrub	981.70	2.16	7.94	0.83	0.23	970.64
Disturbed Coastal Sage Scrub	51.24	—	3.02	—	—	48.21
Chamise Chaparral	49.49	—	0.43	—	—	49,06
Disturbed Chamise Chaparral	1.58	—	—	—	—	1.58
Scrub Oak Chaparral	0.35	—	—	—	—	0.35
Southern Mixed Chaparral	4.95	—	—	—	—	4.95
Disturbed Valley Needlegrass Grassland	7.52	—	0.02	—	—	7.50
Nonnative Grassland	3.11	—	—	—	—	3.11
Cismontane Alkali Marsh	1.67	—	—	—	—	1.58
Disturbed Cismontane Alkali Marsh	0.18	—		—	—	0.18
Mulefat Scrub	0.09	—	—	—	—	0.09
Open Water	0.00	—	—	—	—	—
Southern Willow Scrub	0.26	—	—	—	—	0.29
Developed Land	0.08	—	0.08	—	—	—
Disturbed Habitat	4.72	0.02	0.15	—	—	4.55
Stock Pond	0.29	—	—	—	—	0.29
Total	**1,107.23**	**2.18**	**11.65**	**0.83**	**0.23**	**1092.35**

To determine the management actions and the types of habitat restoration (level of effort) required of Alternative H, the site was surveyed as requested by the Wildlife Agencies in 2013 and the various areas within the proposed preserve were generally categorized as requiring: 1) complete restoration; 2) enhancement; or 3) management. Much of this Preserve area is high quality habitat for Quino checkerspot butterfly and has been documented to be occupied by the species.

While the protocol surveys and Quino Amendment analysis did not require analysis of impacts from edge effects, edge effects are analyzed as indirect impacts and are addressed under the MSCP as adjacency issues. In addition, the Otay Ranch RMP addresses indirect impacts through the preparation and implementation of a Preserve Edge Plan for each SPA/project and is included in the EIR. In order to protect the preserve from human intrusion and edge effects upon completion of construction, a fence or wall, along with informational signs, will be installed (i) along all open space edges where open space is adjacent to residential uses, (ii) along internal streets, and (iii) as indicated in the Otay Ranch Resort Village Preserve Edge Plan and Proposed Fencing, Preserve signage, and Fuel Modification Zones. The barrier must be able to preclude human entry and may be any suitable construction material, as approved by Department of Planning and Development Services and the Director of Parks and Recreation.

Alternative H preserves a sufficient amount of habitat to ensure the long-term conservation of the species as outlined in the Quino Checkerspot Butterfly Management/Enhancement Plan. As shown in the Plan, the preserve design includes significant larval host plant populations, known occurrences of the Quino checkerspot butterfly from multiple years of surveys, suitable habitat for the species, and ridgelines and hilltops where the species has been recorded during multiple years of surveys. There also is connectivity to off-site occupied areas to the north, east, and south and provisions are included in the project design to provide for connectivity within the site as well as to off-site areas. Thus, Alternative H preserves occupied Quino checkerspot butterfly habitat within the same region as the impact within on-site locations. Implementation of these measures will reduce the Alternative H direct, indirect and cumulative impacts to Quino checkerspot butterfly and its critical habitat to a less-than-significant level.